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November 7, 1995
(Via Hand Delivery)

RECEIVED
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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, DC 20554

RE: Ex Parte Communication
CC Docket 92-297

Dear Mr. Caton:

Pursuant to Section 1.1206 of the Commission's rules, 47 C.F.R. § 1.1206, this will serve to indicate that the attached letter from Joe Gorman, Chief Executive Officer of TRW, was delivered to Chairman Hundt (and those shown as receiving copies) yesterday and that the attached Memorandum was submitted on behalf of TRW today to those persons indicated.

Sincerely,

Norman P. Leventhal
Attorney for TRW Inc.

NPL/vlp

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List ABCDE

TRW Inc.

Executive Offices
1900 Richmond Road
Cleveland, OH 44124

Joseph T. Gorman
Chairman of the Board &
Chief Executive Officer

October 27, 1995

Reed Hundt
Chairman
Federal Communications Commission
1919 M. St. NW
Washington, DC 20554

Dear Chairman Hundt:

I am concerned about the FCC's continued consideration of a plan which would move TRW's Odyssey MSS feeder links from 28/19 GHz to 19/15 GHz. TRW's representatives in Geneva attending WRC-95 have told me that some members of the FCC staff continue to believe that such a relocation would be acceptable to TRW. This is not the case.

As indicated by Tim Hannemann, Executive Vice President of TRW's Space and Electronics Group, during his meeting with you on September 20, TRW has long planned to leverage our 20/30GHz technology investment to benefit the MSS consumer. A change at this point would result in a six-month delay and a $40 million increase in cost, to the great competitive disadvantage of Odyssey. As one of the first to file for 28GHz MSS feeder link spectrum in 1991, TRW has worked with all of the other applicants to make sharing of the 28GHz allocation possible, despite the recent difficulty of including exclusive spectrum for LMDS and FSS providers. We are convinced that such sharing is possible and efficiently utilizes the band that the U.S. is requesting at WRC-95.

I would appreciate your review of the FCC plans for MSS feeder link assignments and ask only that TRW be treated similarly to Motorola in planning for an efficiently shared feeder link band at 28 GHz.

Sincerely,

Joseph T. Gorman

cc: Commissioner Quello
Commissioner Barrett
Commissioner Chong
Commissioner Ness
Scott Harris, Chief, International Bureau
Donald Gips, Dep. Chief, Office Plans and Policy

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MEMORANDUM

November 7, 1995
(via Hand Delivery)

TO: Ruth Milkman
Rudy Baca
Jane Mago
Lisa Smith
Mary McManus

CC w/ encl.: Scott Harris
Don Gips
Tom Tycz
Greg Rosston

FROM: Norm Leventhal

RE: **TRW ODYSSEY CASE FOR 28GHz FEEDER LINKS**

First, let me thank each of you again for your time in meeting with myself and Peter Hadinger concerning TRW's needs in the 28GHz band. We know the matter is a difficult one and we thought the following summary might help in your evaluation of our case.

- TRW, which presently holds an FCC construction permit and is ready to build and implement its Odyssey MSS system, has long had plans to utilize the Ka-band for feeder links premised on its pioneering work done for the NASA TDRSS and ACTS satellite projects -- technology advances which TRW intends to leverage into lower costs for its MSS system users.

- Since it filed the Odyssey application in 1991, TRW has consistently maintained its need for feeder links in the 28GHz band. Its evaluation of the 15/19GHz band with reverse band working ("RBW") was done in an effort to help the

Commission staff resolve the difficulties encountered in attempting to satisfy everyone. Unfortunately, TRW's evaluation led it to conclude last summer that moving down in frequency would impose unacceptable cost and delay penalties and threaten the viability of cost effective MSS services.

- TRW has determined that losing access to the 28GHz band for Odyssey feeder links would result in a short-term cost penalty of at least $40 million and a delay in system implementation of at least six months; all while our principal competitor seeking access to the same frequencies for its feeder links (Motorola's Iridium) is permitted to go forward.

- These immediate penalties do not take into account numerous longer term encumbrances that would result from a forced move to 15/19GHz:

  - beam diameters will increase by 30% at lower frequencies making coordination of Odyssey feeder link earth stations more difficult due to spill over to other countries. (At Ka-band the narrow feeder link beams can be confined to the countries where Odyssey feeder link ground stations will be located.)

  - WRC-95 is now moving towards establishing out-of-band pfd limits in the 15.4 to 15.7GHz downlink that would require filtering of the satellite transmitted signal to an extreme degree.

    The pfd emission limit in 15.4 to 15.45 and 15.65 to 15.7GHz is -146 dB/M^2/MHz which is 35 dB less than the limit of -111 dB/M^2/MHz in the band 15.45 to 15.65GHz. This forces an extremely difficult (if not impossible) and expensive out-of-band filter design. Moreover, the British and French are now proposing even stricter in-band pfd limits in 15.45 to 15.65GHz.

Additionally, the band immediately below 15.4GHz is a radio astronomy band. Protection to the same level required at the second harmonic of Odyssey's S-band transmit frequency would require a pfd at -181 $dB/M^2/MHz$. This is 70 dB below the 15.45 to 15.65 GHz in-band limit. This second requirement may render the 15GHz band useless.

- use of RBW will require Odyssey to coordinate with other primarily non-U.S. services in the forward direction; this may require increased ground station costs due to the need to protect other services.

All of the foregoing renders the filtering problem almost insurmountable. Even if retrievable, the cost increase to Odyssey to adopt RBW would be far in excess of $100 million. This is clearly an unacceptable alternative to Ka-band.

- Of all the satellite proponents, only TRW has submitted a detailed proposal to share the 29.1-29.5GHz band with other satellite interests. (TRW has no significant difficulty sharing with LMDS as currently proposed.) While Motorola and Hughes have both informally acknowledged the feasibility of TRW's sharing plan, neither has been willing to state so publicly; instead, each prefers to suggest that Odyssey go elsewhere.

  - It is important to recognize that the Commission **has already determined that sharing is feasible between MSS feeder links and LMDS** (in the 29.1-29.25GHz band) **and GSO/FSS** (in the 29.25-29.5GHz band) by proposing in the CC Docket 92-297 NPRM that the services be co-primary in the band.

- Similarly, the WRC conference preparatory report reaches this same conclusion and the U.S. delegation (as evidenced by the attached letter sent to the Japanese by the U.S. and Canadian heads of delegation) is now actively urging to other countries that MSS feeder links and GSO/FSS can share spectrum in the Ka-band.

- Although TRW greatly preferred to co-locate its principal U.S. feeder link earth station in Los Angeles, to make use of personnel and other efficiencies at its main satellite development, construction and monitoring facilities, TRW has shouldered the cost of relinquishing this ideal solution to accommodate the desires of LMDS and GSO/FSS applicants to provide services in all major metropolitan markets.

- In TRW's view, the Commission should require **all** parties meaningfully to discuss sharing solutions -- after all, that is what a co-primary designation means. It is not only TRW's burden to secure the agreement of Hughes, Motorola and others; under a co-primary allocation, every applicant has the obligation to reach a satisfactory sharing solution.

* * *

TRW has made substantive and meaningful sharing proposals to the Commission. It asks that the parties concerned with the 29.1-29.5GHz band be required to work out a sharing solution -- under the Commission's auspices -- that will provide the greatest satisfaction to all respective interests.

Geneva

October 31, 1995

Dear Mr. Motai,

The Canadian and United States administrations request the support of the Japanese administration for the allocation of spectrum for NGSO MSS feederlinks which are consistent with our proposals. We ask you to consider the points below.

- At least two systems have registered for NGSO MSS feederlinks in Ka-band. Iridium uses 200 MHz and Odyssey™ uses 300 MHz.
- Each Odyssey satellite produces 61 beams and reuses an average of 5 MHz in each beam. This leads to the need for a minimum of 300 MHz of feederlink spectrum (61 beams times 5 MHz).
- CDMA systems, like Odyssey™, are able to share the service link spectrum with other systems. It is neither practical nor desirable to process CDMA signals on-board the satellites and thereby compress the feederlink spectrum.
- Odyssey™ uses spot beams for feederlinks, therefore the feederlink spectrum is only required in small regions around the 7 Earth stations.
- The CPM report concludes that MSS feederlinks can be shared by a few GSO FSS and two NGSO MSS systems.
- U.S. proposes 400 MHz of feederlink spectrum to be shared by GSO FSS. The U.S. proposal recognizes that coordination and sharing require flexibility in frequency assignment. The U.S. proposal assumes 100 MHz overlap between the U.S. systems.
- Canada proposes 500 MHz of spectrum, not shared with GSO FSS. Canada assumes that there will be multiple MSS feederlink spectrum in this band and that there will be a large number of GSO systems that would desire to share this band. Consequently, sharing problems will become much more difficult.
- Systems which use Ka-band feederlinks need only a small part of the available bandwidth. Either 400 MHz or 500 MHz of shared or unshared feederlink spectrum is a small percentage of the 2.5 GHz which is allocated to FSS in the 20 / 30 GHz bands.
- Restricting feederlink spectrum will reduce capacity and increase the overall cost per channel. Higher capacity satellites enable more economical service in rural and developing regions.

In order to provide a viable NGSO MSS service, sufficient feederlink spectrum is essential.

Sincerely,

G.R. Begley
Head of Delegation
Canada

B. Fontes
Chairman
U.S. Delegation

Mr. A. Motai
Head of Delegation
Japan